

(iii) CLEAN VERSION WITH INSTRUCTIONS FOR ENTRY

Instructions for Entry

IN THE CLAIMS:

Please cancel Claim 32.

Please amend the claims, as set forth below.

6. A method of importing a biologically active molecule into a cell in a subject comprising administering to the subject a complex comprising the molecule linked to a mammalian hydrophobic importation competent signal peptide, thereby importing the molecule into the cell of the subject,

wherein said cell is selected from a tissue cell or an organ cell;

wherein said biologically active molecule is selected from the group consisting of:

(i) a protein or a portion of a protein selected from the group consisting of a growth factor polypeptide, an enzyme polypeptide, a transcription factor polypeptide, a toxin polypeptide, an antigenic polypeptide, a vaccine polypeptide, an antibody polypeptide;

(ii) a portion of a nucleic acid selected from the group consisting of a plasmid DNA, a DNA coding sequence, an mRNA and an antisense RNA;

(iii) a carbohydrate; a lipid; a glycolipid;

wherein said tissue cell or organ cell is further selected from the group consisting of: an immune system cell, a blood vessel cell, a lung epithelium cell, a kidney cell, a fibroblast cell, an epithelial cell, an endothelial cell, a tumor cell, a lymphocyte, an antigen presenting cell, a T cell and a Schwann cell; and,

wherein said complex induces or inhibits a biological response in the cell that is selected from the group consisting of: a mitogenic response in the cell, an inhibition of cell division in the cell, an immune antibody or cytokine response in the cell, an inhibition of an autoreactive immune response in the cell, an inhibition of transcription in the cell, an inhibition of tyrosine phosphorylation in the cell and an inhibition of nuclear translocation of a transcription factor complex from the cytosol to the nucleus in the cell.

7. The method of Claim 6, wherein the molecule is selected from the group consisting of a peptide, polypeptide, and protein.

8. The method of Claim 6, wherein the molecule is selected from the group consisting of a nucleic acid, carbohydrate, lipid, and a glycolipid.

9. The method of Claim 6, wherein the signal peptide comprises the amino acid sequence set forth in SEQ ID NO:5.

10. The method of Claim 6, wherein the molecule is an antigenic peptide.

11. A method of importing a biologically active molecule into the nucleus of a cell in a subject comprising administering to the subject a complex comprising the molecule linked to an importation competent signal peptide and a nuclear localization peptide, thereby importing the molecule into the nucleus of the cell of the subject.

12. The method of Claim 11, wherein the signal peptide comprises the amino acid sequence set forth in SEQ ID NO:5.

13. The method of Claim 11, wherein the nuclear localization peptide comprises the amino acid sequence set forth in SEQ ID NO:2.

14. The method of Claim 11, wherein the nuclear localization peptide comprises the amino acid sequence set forth in SEQ ID NO:10.

15. The method of Claim 11, wherein the nuclear localization peptide comprises the amino acid sequence set forth in SEQ ID NO:11.

16. A method of regulating the growth of a cell in a subject comprising administering to the subject the complex of claim 1 comprising a growth regulatory peptide linked to the importation competent signal peptide.

17. The method of Claim 16, wherein the cell is a tumor cell.

18. The method of Claim 16, wherein the growth regulatory peptide stimulates the cell growth and comprises the nuclear localization sequence of acidic fibroblast growth factor.

19. The method of Claim 18, wherein the growth regulatory peptide comprises the amino acid sequence set forth in SEQ ID NO:3.

20. The method of Claim 18, wherein the growth regulatory peptide comprises the amino acid sequence set forth in SEQ ID NO:4.

21. The method of Claim 16, wherein the growth regulatory peptide inhibits the cell growth.

22. The method of Claim 21, wherein the growth regulatory peptide comprises the amino acid sequence set forth in SEQ ID NO:9.

23. A method of inhibiting expression in a cell in a subject of a gene controlled by transcription factor NF-κB comprising administering to the subject the complex of claim 1 comprising an importation competent signal peptide linked to a nuclear localization peptide of an active subunit of NF-κB complex.

24. The method of Claim 23, wherein the subunit of NF-κB is subunit p50.

25. The method of Claim 24, wherein the complex comprises the amino acid sequence set forth in SEQ ID NO:9.

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26. A method of stimulating the immune system of a subject comprising administering to the subject the complex of claim 1 further comprising an importation competent signal peptide linked to an antigenic peptide.

33. A method of screening signal peptides for the ability to effect the importation of a biologically active molecule into a cell comprising administering to the cell a complex comprising the molecule linked to the signal peptide and determining whether the molecule is imported into the cell, the presence of importation of the molecule indicating a signal peptide which can effect importation.

PLEASE ENTER NEW CLAIMS 34-38 as follows: namely,

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34. The method of claim 6, wherein said complex further comprises a peptide therapeutic drug agent for treating a disease selected from the group consisting of: a heart condition, a cancer, an endocrine disorder, a neurological defect, a respiratory condition, an allergy and an autoimmune disease.

35. The method of claim 6, wherein said biological response is inhibition of transcription in the cell.

36. The method of claim 35, wherein said biological response is altered expression of a cytokine, a growth factor, an interleukin, a colony stimulating factor, a plasminogen activator, a procoagulant tissue factor and a virus gene product.

37. The method of claim 36, wherein said interleukin is IL-1, TNF- α or IL-6.

38. The method of claim 36, wherein said virus gene product is an HIV or a CMV gene product.